

**WE CLAIM:**

- 1        1. A phase-shift mask, comprising:
  - 2              at least one first pattern, the first pattern being arranged in a two-dimensional
  - 3              matrix with a multiple of second patterns, the second patterns being substantially identical
  - 4              to the first pattern, the first pattern including:
    - 5                  at least a first portion having
      - 6                    i) a first area,
      - 7                    ii) a first transmission of electrical field strength of light, to be
      - 8                  irradiated through the mask, and
      - 9                    iii) a first phase-shift exerted on light traversing the mask through the
      - 10                 first portion, and at least a second portion having
        - 11                    i) a second area,
        - 12                    ii) a second transmission of electrical field strength of light to be
        - 13                  irradiated through the mask, and
        - 14                    iii) a second phase-shift exerted on light traversing the mask through the
        - 15                 second portion, the second phase-shift being different from the first phase-shift,
        - 16                 wherein the product of the first area of the first portion times the first transmission
        - 17                 is substantially equal to the product of the second area of the second portion times the
        - 18                 second transmission, and the first and second transmission are different with respect to
        - 19                 each other.
- 1        2. The phase-shift-mask according to claim 1, wherein a third portion of the
- 2        first pattern is not transparent for light.

1           3.     The phase-shift-mask according to claim 1, wherein a first width of the  
2     first portion and a second width of the second portion extend in a first direction, the ratio  
3     of the first width to the second width being different from 1, and a first length of the first  
4     portion and a second length of the second portion extend in a second direction, the second  
5     direction being orthogonal to the first direction, the ratio of the first length to the second  
6     width being different from 1.

1           4.     The phase-shift mask according to claim 1, wherein each of the portions of  
2     the first pattern is symmetric about at least one axis.

1           5.     The phase-shift mask according to claim 2, wherein each of the portions of  
2     the first pattern is symmetric about two orthogonal axes.

1           6.     The phase-shift mask according to claim 1, wherein the first portion  
2     comprises a square, and the second portion comprises a set of four lines bordering and  
3     enclosing four sides of the square of the first portion.

1           7.     The phase-shift mask according to claim 1, wherein the first portion  
2     comprises a first sub-pattern being a U-shaped, the second portion comprises a second  
3     sub-pattern being U-shaped, open ends of the U-shapes are orientated towards each other,  
4     the first portion comprises a third rectangular sub-pattern, which is enclosed on three  
5     sides by the second sub-pattern of the second portion, the second portion comprises a

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6      fourth rectangular sub-pattern, which is enclosed on three sides by the first sub-pattern of  
7      the second portion.

1                8.      The phase-shift mask according to claim 1, wherein the first and second  
2      transmission are larger than 45 percent of the irradiated light.